

RAT-FLEAS IN FREETOWN, SIERRA LEONE

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Hirst's (1923) work has attracted attention to the importance which must be attached to the relative proportion of various species of *Xenopsylla* on rats in places which appear liable to plague epidemics. He concluded from his observations that *X. astia* was a much less efficient transmitter of plague than is *X. cheopis*.

In Freetown a hundred rats sent by the Sanitary Department were examined during the months of January and February, 1923: the rats came from various parts of the town; the numbers were:—

Black rats	62
Brown rats	38

All the fleas removed from the rats were collected, a total number of 657. Of these 654 belonged to the genus *Xenopsylla* and 3 to the genus *Ctenocephalus*. The 654 *Xenopsylla* comprised 419 fleas of the species *X. brasiliensis* Baker (1904), and 235 of *X. cheopis* Rothschild (1903). The *Ctenocephali* belonged to the species *C. canis* Dugès. In the table are shown the numbers and sex of the rats harbouring *Xenopsylla* and the species recovered from them.

No *X. astia* were found on these rats; Evans (1922), however, records this species among rat fleas sent to her from the Gold Coast.

Xenopsylla brasiliensis, Baker (1904) was originally described from Sierra Leone, but its capacity for transmitting plague bacilli has not

so far been worked out. Whether it exhibits that relative inability which Hirst attributes to *X. astia* in Ceylon is unknown.

It is of interest to note that Newstead and Evans (1921), who examined 469 black rats from ships in Liverpool (59 of these rats being obtained from ships coming from various West African Ports), do not record any *X. brasiliensis* from the 469 rats examined, whereas they found 489 *X. cheopis*. Again, Balfour (1922) did not report any *X. brasiliensis* on 34 black and 444 brown rats obtained mostly in London, whereas he records *X. cheopis* on 5.9 per cent. of the black rats and 3.6 per cent. of the brown rats. Hirst (1923) states that *X. brasiliensis* is found on the rats of West Africa, South America and the uplands of Peninsula India.

TABLE I.

	Total	Number infested	<i>X. brasiliensis</i>	<i>X. cheopis</i>
Black Rats ♂	21	19	68	36
" ♀	41	30	74	75
Brown Rats ♂	17	15	185	87
" ♀	21	19	92	37
	—	—	419	235

Cragg (1920) states that *X. brasiliensis* is not common in India and cites Poona, Mangalore, Bombay City, and Ootacamund as the only places from which it had then been received by him.

Owing to the smallness of the numbers of West African ship-rats examined here and in Liverpool, it is not yet possible to say whether *X. brasiliensis* is capable of remaining alive during transport on ships to England.

Whether *X. brasiliensis* is a plague-transmitting flea or not, it appears probable from our figures that there is a sufficiently large percentage of *X. cheopis* present on rats in Freetown to carry plague effectually in epidemic form, should this disease be imported.

The number of rats in Freetown is large, and, owing to the extensive area which is at present capable of providing natural

shelter for them, it is evident that vast numbers would survive any ordinary efforts at reduction.

The city of Freetown possesses many quarters in which the native population is overcrowded and it contains, also, a large floating population. All these factors are of importance in the case of plague epidemics. The chief protection of this port, in the past, against the introduction of plague from other coastal regions has probably been the absence of a deep-water wharf.

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